

PRAMSGRAM

OKLAHOMA PREGNANCY RISK ASSESSMENT MONITORING SYSTEM VOL 19 NO 1 SUMMER 2015

Preconception Health and Racial Disparities

Introduction:

In the United States, major advances in perinatal health care have occurred within the last decade. This progress, although significant, has not alleviated the poor birth outcomes many families continue to experience.¹ Even with the best health care during pregnancy, it is difficult to overcome the effects of unhealthy behaviors that existed prior to conception. Addressing these behaviors during preconception can ameliorate health concerns before they can impact a pregnancy. By focusing on health across the lifespan, risk reductions and improved health behaviors will impact a woman's health before, during and after pregnancy, resulting in healthier babies, healthier families and healthier aging populations.^{1,2}

In the US and in Oklahoma, racial disparities in health and pregnancy outcomes persist. Infants of African American and American Indian women are more likely to die before their first birthday than White or Asian infants.³ Additionally, rates of preterm birth and maternal mortality are higher for African American women compared to White mothers.

Income and education are often major contributors to the racial disparities found among women. Studies have found that among women with the same health insurance plans and similar income levels, African-American women were less likely than White women to use primary and prenatal care services.⁴ Other contributing factors to racial disparities in birth outcomes include social class, education, poverty and the chronic exposure to stress linked to racism, which reduces the mothers' physical and psychological health.⁵ These statistics suggest that by focusing on health and the social determinants of health prior to pregnancy and across the lifecourse, outcomes for women and infants may be improved.

In Oklahoma:

- Significant differences in preconception health persisted across racial and ethnic groups.
- Non-Hispanic American Indian mothers had the highest rates of smoking three months before pregnancy (46.0%) compared to Non-Hispanic African American (27.9%), Non-Hispanic White (37.3%) and Hispanic (12.1%) mothers.
- Non-Hispanic White mothers reported the highest rates of alcohol use before pregnancy (57.3%) compared to all other mothers.
- Pre-pregnancy folic acid/multivitamin use was lowest among the Non-Hispanic African American and Non-Hispanic American Indian mothers (27.9% and 27.3%, respectively).
- Non-Hispanic African American mothers had significantly lower odds of smoking or drinking before pregnancy compared to Non-Hispanic White mothers.
- Non-Hispanic African American, Non-Hispanic American Indian, and Hispanic mothers were more likely to have been checked or treated for diabetes prior to pregnancy when compared to Non-Hispanic White mothers.
- Non-Hispanic African American mothers were twice as likely as Non-Hispanic White mothers to have been checked or treated for high blood pressure prior to pregnancy.

This PRAMSgram was created to better understand the preconception health status of women in Oklahoma and the disparities that need to be addressed to improve the health of all mothers and infants.

Methods:

PRAMS data for years 2009 to 2011 were used to assess racial disparities in preconception health factors among Oklahoma women delivering a live born infant.

A series of indicators were considered to assess preconception health. Maternal demographic factors such as the age of the mother, race, education, marital status, and household income were compared. Insurance coverage (which includes Indian Health Service (IHS) and tribal health care) and teeth cleaning were analyzed as proxies for access to health and dental care, respectively. IHS and tribal health care are not health insurance, but for this study were grouped as such, because they do provide access to health services. Also, behaviors such as smoking, alcohol use, pre-pregnancy body mass index, daily exercise, and multivitamin intake were assessed for the mothers. The prevalence of pre-pregnancy health conditions such as diabetes, high blood pressure, depression and regular use of prescription drugs were also examined. To simplify assessment, the factors were grouped into three major preconception categories. The categories were demographics and social determinants, behaviors, and chronic conditions. For this report race and Hispanic origin are categorized as Non-Hispanic White, Non-Hispanic African American, Non-Hispanic American Indian, Non-Hispanic other, and Hispanic.

Chi-square tests were used to examine differences in preconception health indicators by race and Hispanic origin. Multivariate logistic regression analysis was used

The Pregnancy Risk Assessment Monitoring System (PRAMS) is an ongoing, population-based study designed to collect information about maternal behaviors and experiences before, during, and after pregnancy. Monthly, PRAMS sampled between 200 to 250 recent mothers taken from the Oklahoma live birth registry. Mothers were mailed up to three questionnaires seeking their participation. Follow-up phone interviews for non-respondents were conducted. A systematic stratified sampling design was used to yield sample sizes sufficient to generate population estimates for groups considered at risk for adverse pregnancy outcomes. Information included in the birth registry is used to develop analysis weights that adjust for probability of selection and non-response.

to calculate adjusted risk ratios (RR) and 95% confidence intervals for the indicators by race and Hispanic origin. When comparing prevalence estimates across race, a p-value was considered statistically significant at alpha < 0.05. SAS callable SUDAAN version 11.0.1 was used for the analysis.

Results:

Table 1 shows the distribution of the mothers' selected demographics and social determinants of health. Non-Hispanic (NH) American Indian mothers were younger than the other racial groups. Hispanic mothers were the least educated. NH African American mothers had the lowest annual household income, less than \$25,000. More NH White mothers were married compared to other races. Over 80% of the NH American Indian mothers and mothers of other races were covered under some form of insurance or health care coverage (including IHS and tribal health care), while Hispanic mothers had the lowest insurance coverage.

Table 1. Maternal Demographics and Selected Social Determinants of Health, Oklahoma PRAMS 2009-2011

Maternal Demographics/Social Determinants	Maternal Race					p-value
	NH White	NH African American	NH American Indian	NH Other	Hispanic	
Maternal Age						
< 20 yrs	9.6	16.9	18.4	15.5	14.0	<0.05
20-29 yrs	61.5	57.7	64.2	49.4	54.7	
≥30 yrs	28.9	25.4	17.4	35.1	31.3	
Education						
<HS	12.8	14.6	19.2	16.1	53.6	<0.05
HS	29.3	37.2	38.7	23.3	26.2	
>HS	58.0	48.3	42.1	60.6	20.1	
Household income						
<\$25000	43.2	76.8	63.5	59.1	72.6	<0.05
\$25,000 - \$49,999	25.5	14.9	22.2	18.3	21.3	
\$50,000 or more	31.4	8.4	14.3	22.7	6.2	
Marital Status						
Married	64.2	29.3	47.2	56.0	56.9	<0.05
Other	35.8	70.8	52.8	44.0	43.2	
Insured Before Pregnancy						
	68.8	66.0	81.2	81.9	44.1	<0.05
Pre-pregnancy BMI						
Underweight	4.2	5.7	6.1	7.1	-	>0.05
Normal	50.1	41.3	41.7	49.4	41.9	
Overweight	24.4	27.0	23.6	25.8	24.7	
Obese	21.3	26.1	28.6	17.6	29.0	
Pre-pregnancy teeth cleaning						
	49.7	50.4	36.7	48.0	33.9	<0.05
Unintended Pregnancy						
	44.0	60.3	56.7	50.5	42.4	<0.05
Previous live birth						
No	39.3	39.1	39.2	44.8	32.4	>0.05
Yes	60.7	60.9	60.8	55.2	67.6	

More than half of the NH African American mothers, NH American Indian mothers and Hispanic mothers were either overweight or obese with obesity highest among NH American Indian mothers and Hispanic mothers. NH African American mothers reported the highest use of preventive dental care services (50.4%). They also had the highest rate of unintended pregnancies.

Hispanic mothers had the lowest rate in smoking and alcohol use three months before pregnancy (Figure 1). Nearly half of the NH American Indian mothers smoked or used alcohol three months before pregnancy. Alcohol use was highest among NH White mothers. There were statistically significant differences in rates between the races for smoking and alcohol use. Multivitamin intake daily or on some days was lowest among NH American Indians and highest among NH Whites. Exercising was not significantly different across racial and ethnic groups, and approximately 41% of mothers reported exercising 3 or more days a week prior to pregnancy (data not shown).

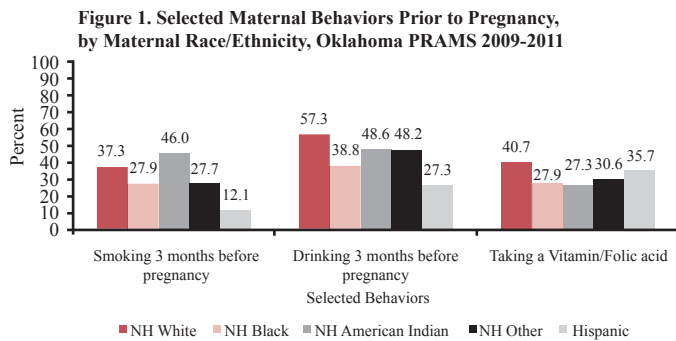
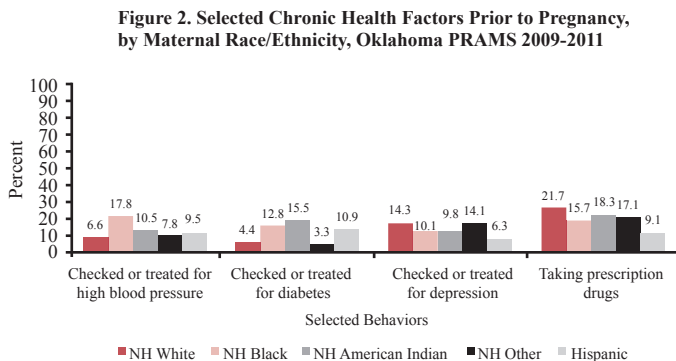


Figure 2 highlights chronic health-related factors, such as having a screening or treatment for high blood pressure or diabetes, being assessed or treated for depression, and taking prescription medications. No differences were found among women who reported talking to a health care provider about family medical history (data not shown).



Results from the logistic regression analysis adjusting for age, income, marital status, education, insurance before pregnancy and parity are shown in Tables 2-4. Of the selected social determinants of health, only insurance status prior to pregnancy was found to be significantly different, as NH American Indian and NH Other mothers were more likely to have insurance (including government provided insurance and IHS or tribal health care) prior to pregnancy (Table 2) than were NH White mothers.

Table 2. Adjusted* Risk Ratios (ARR) to Determine Racial Disparities in Selected Social Determinants of Health, Oklahoma PRAMS 2009-2011

Selected Social Determinant	Ref	Maternal Race ARR (95% C.I.)			
		NH African American	NH American Indian	NH Other	Hispanic
Insured	Ref	1.1 (1.0-1.2)	1.3 (1.2-1.4)	1.2 (1.1-1.4)	0.9 (0.9-1.0)
Overweight or Obese	Ref	1.2 (1.0-1.4)	1.1 (1.0-1.3)	1.0 (0.8-1.2)	1.2 (1.0-1.4)
Teeth cleaned	Ref	1.2 (1.0-1.4)	0.9 (0.7-1.0)	1.0 (0.8-1.2)	1.0 (0.8-1.1)

* Adjusted for age, income, marital status, and education

NH African American and Hispanic mothers were less likely to drink or smoke prior to pregnancy compared to NH White mothers (Table 3). NH mothers of other races were less likely to take a multivitamin or folic acid before becoming pregnant.

Table 3. Adjusted* Risk Ratio to Determine Racial/Ethnic Disparities in Selected Pre-pregnancy Behavioral Factors, Oklahoma PRAMS 2009-2011

Selected Behavior	Ref	Maternal Race ARR(95% C.I.)			
		NH White	NH African American	NH American Indian	NH Other
Smoking 3 months before pregnancy	Ref	0.5 (0.4-0.7)	1.0 (0.9-1.2)	0.7 (0.6-0.9)	0.2 (0.2-0.3)
Drinking 3 months before pregnancy	Ref	0.7 (0.6-0.9)	0.9 (0.7-1.0)	0.9 (0.7-1.0)	0.6 (0.5-0.8)
Vitamin/Folic acid	Ref	0.9 (0.7-1.2)	0.8 (0.7-1.0)	0.7 (0.6-0.9)	1.2 (1.0-1.4)

* Adjusted for age, income, marital status, education, insurance, and parity

A review of the chronic health factors found that NH African American mothers were more likely to have been checked or treated for high blood pressure and diabetes and more likely to have talked with a health care provider about a family medical history than NH White mothers. NH American Indian mothers were more likely to have been checked/treated for diabetes but less likely to have been checked/treated for depression than NH White mothers. No differences were found between the

NH Others and NH Whites (Table 4). Hispanic mothers were more likely to be checked/treated for diabetes and less likely to be checked/treated for depression and less likely to take prescription drugs when compared with NH White mothers.

Table 4. Adjusted* Risk Ratio to Determine Racial/Ethnic Disparities in Selected Pre-pregnancy Chronic Health Factors, Oklahoma PRAMS 2009-2011

Chronic Health Conditions	Maternal Race ARR(95% C.I.)				
	NH White	NH African American	NH American Indian	NH Other	Hispanic
Checked/treated for high blood pressure	Ref	2.3 (1.5-3.7)	1.3 (0.8-2.1)	1.0 (0.5-1.8)	1.0 (0.6-1.6)
Checked/treated for diabetes	Ref	2.4 (1.3-4.3)	3.0 (1.9-4.8)	0.6 (0.3-1.3)	2.1 (1.3-3.4)
Checked/treated for depression	Ref	0.6 (0.3-1.0)	0.5 (0.3-0.8)	0.9 (0.6-1.3)	0.4 (0.2-0.6)
Talked to provider about family medical history	Ref	1.5 (1.1-2.0)	1.0 (0.8-1.4)	1.0 (0.7-1.4)	0.9 (0.7-1.3)
Taking prescription drugs	Ref	0.8 (0.5-1.1)	0.8 (0.6-1.2)	0.7 (0.5-1.0)	0.5 (0.3-0.8)

*Adjusted for age, income, marital status, education, and insurance

Discussion:

Significant differences in preconception health persisted across racial and ethnic groups. Some differences, such as those for smoking and alcohol use prior to pregnancy, were lower or the same among the populations most at risk for infant and maternal mortality when compared to White mothers. And other potential risk markers for future pregnancy health, like having blood pressure and/or diabetes checked or treated 12 months prior to pregnancy, were higher for non-White mothers. Without knowing why a mother was checked or treated or who suggested intervention, only limited conclusions can be drawn. However, the results support the need for preconception health care and increasing access to care for NH African American and NH American Indian mothers.

Controlling existing health conditions, which are influenced by social determinants of health, prior to and during pregnancy can drastically improve birth outcomes. Mothers with pre-existing diabetes and hypertension prior to pregnancy require lifestyle modifications, including diet, exercise, and medications in order to reduce the health risks to their pregnancies, which can include stillbirth, preterm birth, congenital malformations, or maternal or infant death.^{6,7} The higher risk for African American women for high blood pressure and hypertension is well documented, as is the

increased risk for African Americans, American Indians, and Hispanics for diabetes, when compared to the White population.^{8,9}

Preconception care must include all women of reproductive age, whether or not they are intending to become pregnant. It is important that preconception care be inclusive, as a large number of pregnancies are unplanned.¹⁰ Preconception care must go beyond patient education. In order to be effective, it must work to reduce barriers to effective behavior change and include strategies to motivate women to utilize services and modify lifestyles.¹¹ As stress, social class, and other social determinants of health become more prominent in the research and discussions surrounding poor birth outcomes and health disparities, more outcomes-based research and evaluation are needed for the models of preconception care and health across the lifecourse described in the literature, to demonstrate effectiveness.¹¹⁻¹⁷

Research suggests that, at least in the United States, birth outcomes may be better understood as measurements of deep-rooted disparities among women of child-bearing age, and less as reflections of poor health behaviors or inadequate healthcare.¹³ This makes it imperative to understand the underlying causes and social determinants directing these health disparities which impact Oklahoma's maternal and child health, as efforts are made to ensure health equity for all.

Limitations for this study include social desirability bias for some questions, such as those relating to tobacco and alcohol use; lack of knowledge about whether the mother visited a doctor prior to pregnancy; and, no information on why mothers were checked or treated and who provided the check or treatment for diabetes and blood pressure. Another limitation is that racism as a stressor is not evaluated by PRAMS and may be an important contributor to the disparities and poor health outcomes in Oklahoma. PRAMS data are all maternal self-report.

Recommendations:

1. Educate health care providers to view every interaction with a female or male of reproductive age as an opportunity for preconception health counseling.
2. Ask women in health care settings about future pregnancy plans and promote long-acting reversible contraceptives (LARCs) for those women without pregnancy plans in the next year. For those planning a pregnancy, help them to ensure their chronic conditions are under control and adapt healthy behaviors before pregnancy.
3. Advocate for the provision of preconception care in all health insurance packages for all females and males of reproductive age and promote preconception care as a necessary component of medical care.
4. Utilize the Women's Health Checklist created by the Preconception Workgroup of the statewide initiative to reduce infant mortality, "Preparing for a Lifetime, It's Everyone's Responsibility," to provide preconception care to all females of reproductive age. This tool can be utilized by a variety of health care providers at a multitude of sites, walk-in health clinics, county health departments, community health centers, private providers, and Federally Qualified Health Centers (FQHCs).
5. Support programs like Children First (C1) and Healthy Start that provide client-centered evidence-based preconception counseling and advice to reduce health disparities.
6. Evaluate and utilize non-traditional methods to get health messages to families and communities.
7. Educate women about the importance of knowing and discussing family medical history to facilitate awareness about risks.
8. Create a recognition program of healthy work sites that must include allowing staff to take sick and vacation days to promote wellness.
9. Identify and address systemic racism within the policies of agencies, programs, and health systems.
10. Partner with existing programs and across community sectors to reduce poverty, including programs dedicated to increasing the education of women and young girls.
11. Host a series of focus groups to delve deeper into the issues surrounding health disparities and racism in Oklahoma communities.
12. Advocate for comprehensive, school-based health education for Oklahoma's youth.
13. Ensure that all women are asked about tobacco use and exposure to secondhand smoke in the home and car. Promote cessation services that are provided by the Oklahoma Tobacco Helpline through electronic helpline referrals.
14. Advocate for safety-net programs that provide preventive health services in areas of the state without access to obstetrician/gynecologists (OB/GYNs).

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